

Appl. No. 10/666,493
Reply to Final Office Action of January 25, 2006

REMARKS

Claims 1-19 and 29 are pending. Claim 12 is amended to include features already included in Claim 1 to reduce the number of issues for appeal. No new issue of patentability is raised. Entry of the amendment under 37 C.F.R. 1.116 is proper. Reconsideration of this application is respectfully requested.

Claim rejections under 35 U.S.C. §102(b)

This Action rejected Claims 1-3, 5, 7, 10, 12, 13, 18 and 29 under 35 U.S.C. §102(b) as being anticipated by Jeong (US 6,228,211).

Claim 1 recites a regulating means with openings disposed in said tank and over said drain opening to "control downward draining rate and downward draining direction of said fluid."

Jeong neither discloses nor suggests that his bubbling plate 3 controls downward draining rate and downward draining direction. Jeong's liquid etchant is provided from the pipe 8 into the tank and is drained by the pipe 18. The etchant flows through the spaces (not numbered) between air tubes 22 of the bubbling plate 3. An annotated copy of Jeong's figure is enclosed to show the direction of the liquid flows. Based on FIGS. 1 and 2a of Jeong, the spaces (not numbered) between the air tubes 22 are substantially larger than the drain pipe 18, so that the spaces do not substantially affect the drainage rate or direction. The drain pipe 18 is much smaller than the spaces in the plate 3, so the pipe 18 is a choke-point for Jeong's drainage flow. Thus, the downward flow of the etchant is controlled by the pipe 18, rather than the bubbling plate. Accordingly, though the liquid etchant flows through the spaces between the air tubes 22, the spaces of the bubbling plate 3 do not control the downward draining rate and downward draining directions of the liquid etchant, as required by Claim 1.

Jeong discloses an apparatus for etching a glass substrate. In Jeong's patent, the bubbling plate 3 provides bubbles passing through holes 28 as shown in FIG. 2a. The liquid etchant in Jeong's tank does not flow through the holes 28 from which nitrogen is provided. Had the fluid flowed through the holes 28 of Jeong's bubbling plate 3, nitrogen would not have been

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efficiently and effectively provided in the tank. Without allowing the etchant to flow through the holes 28, Jeong's bubbling plate 3 cannot control downward draining rate and downward draining direction of said fluid.

For at least these reasons, Claim 1 is not anticipated by Jeong and should be allowed.

Claims 2, 3, 5, 7 and 10 depend from Claim 1. They are not anticipated by Jeong for at least the same reasons set forth above with reference to Claim 1.

Claims 12 has been amended, reciting "a regulating plate . . . to control downward draining rate and downward draining direction of said fluid." Because Claim 12 recites the same "control" feature as Claim 1, Claim 12 is not anticipated over Jeong and should be allowed under 102(b) for at least the same reason set forth in reference to Claim 1.

Claims 13 and 18 depend from Claim 12, and should not be anticipated by Jeong for at least the same reason set forth above.

Claim 29 also recites the feature "a regulating plate . . . to control downward draining rate and downward draining direction of said fluid so as to prevent wafer sticking." Claim 29 recites the same "control" feature as Claim 1 and should not be anticipated by Jeong for at least the same reasons set forth in reference to Claim 1.

Claim rejections under 35 U.S.C. §103(a)

This Action rejected Claims 6 and 16 under 35 U.S.C. §103(a) as being unpatentable over Jeong in view of Shindo et al. (US 5,845,660). Applicants believe the Examiner intended to refer to Claim 15, because Claim 16 does not recite the feature of PEEK, which is mentioned in the rejection. Though Shindo discloses some features with respect to PEEK that Jeong fails to disclose, the combined teachings of Jeong and Shindo fail to disclose or suggest the features of the independent Claim 1. Claims 6 depends from Claim 1, and should be patentable for at least the same reason.

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Claim 15 depends from Claim 12, which recites the feature "a regulating plate . . . to control downward draining rate and downward draining direction of said fluid." Because the combined teaching of Jeong and Shindo fails to disclose or suggest the features of the independent Claim 12, Claim 15 should be patentable for at least the same reason discussed above.

The Action also rejected Claims 9, 11, 14, 16 and 19 under 35 U.S.C. §103(a) as being unpatentable over Jeong in view of Sonoda et al. (US 6,616,774). Claims 9 and 11 depend from Claim 1. As discussed above, Jeong fails to disclose or suggest the features of Claim 1. Sonoda's disclosure also fails to cure the deficiency of Jeong's disclosure with respect to the features of the independent Claim 1. The combined teaching of Jeong and Sonoda does not make Claims 9 and 11 unpatentable.

Claims 14, 16 and 19 depend from Claim 12. For at least the same reasons discussed above with respect to claim 12, Claim 14, 16 and 19 are patentable and should be allowed.

The Action alleges that Sonoda teaches a wet etching apparatus wherein a rectifying means has openings and angled rods 24, which are "inclined" with respect to the bottom of the tank 20. Applicants respectively disagree. In Sonoda, the "inclined portions" are the bottom portions 26 of the cleaning tank, rather than the rods 24, which are referenced by the Examiner. Neither the drawings nor specification of Sonoda discloses or suggests to use the bottom portions 26 to control the downward draining flow and rate in the tank. Therefore, this element of applicant's claims is not taught by the combined teachings of the prior art. Further, one of ordinary skill in the art would not have been motivated to incorporate Jeong's bubbling plate 3 and Sonoda's inclined bottom portions 26 at the time applicant's invention was made, because they are disposed at different locations of the tank and provide different functions and purposes. Thus, the combined teachings of Jeong and Sonoda do not achieve the features of Claims 9, 11, 14, 16 and 19.

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Therefore, Claims 9, 11, 14, 16 and 19 should be patentable and not subject to rejection under 35 U.S.C. §103(a) for at least the reasons set forth above.

Claims 4, 8 and 17

The Action did not state any ground for rejection or objection with respect to Claims 4, 8 and 17. Claims 4, 8 and 17 thus should be allowed.

In addition, Claims 4, 8 and 17 depend from and incorporate the feature of the amended Claims 1 and 12, respectively. Claims 4, 8 and 17 should be allowed for at least the same reason set forth with respect to Claims 1 and 12.

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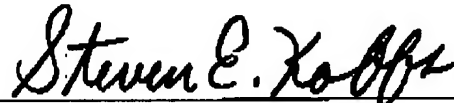
Conclusion

In view of the foregoing amendments and remarks, Applicant submits that this application is in condition for allowance. Early notification to that effect is respectfully requested.

The Commissioner for Patents is hereby authorized to charge any additional fees or credit any excess payment that may be associated with this communication to deposit account 04-1679.

Respectfully submitted,

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